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country districts. When persons reach mature age without knowing anything about Natural History objects, they find it is then too much trouble to investigate these subjects. But by getting at them when young, by simple and forcible illustrations, they are bound to carry it forward with them to a certain extent, and if there should come a time when they are in a position to give time to study, the first they will take up and pursue with patience will probably be some subject of this nature, merely for the pleasure of the study. On the other hand, if they have no inclination to work, they will not forget the pleasant hours they spent when they sat listening to some explanation of an object so familiar, which will create a tendency to put their hands to the bottom of their pockets and act feelingly. If children could be taught to see God in Nature and the wonders which He controls, without cramming the brain with so much theory, by giving them a run into the country along with some one to explain, it would conduce a great deal more to their general health and happiness. Country Museums want illustrating and simplifying as much as possible. Call a spade a spade, *i. e.*, give the local name as well as the scientific one. This education would be another great saving to the nation if it were universal. Half the things that are dug up now are only saved by the merest chance, because the men digging do not care what they are striking their pick through. This would be altered altogether if they had been taught in early youth to take notice of the value and interest there is attaching, often, to things dug up from the earth.

Thirty-five years ago Professor Forbes said: "I cannot help hoping that the time will come when every British town even of moderate size will be able to boast of possessing public institutions for the education and instruction of its adults as well as its youthful and childish population; when it shall have a well-organised Museum wherein collections of natural bodies shall be displayed, not with regard to show or curiosity, but according to their illustration of the analogies and affinities of organised and unorganised objects, so that the visitor may at a glance learn something of the laws of nature; wherein the products of the surrounding district, animate and inanimate, shall be scientifically marshalled, and their industrial applications carefully and suggestively illustrated; wherein the memorials of the neighbouring province, and the races that have peopled it, shall be reverently assembled, and learnedly yet popularly explained; when each town shall have a library, the property of the public, and freely opened to the well-conducted reader of every class; when its public walks and parks (too many as yet existing only in prospect) shall be made instructors in botany and agriculture; when it shall have a gallery of its own, possibly not boasting of the most famous pictures or statues, but nevertheless showing good examples of sound art: examples of the history and purpose of design, and, above all, the best specimens to be procured of works of genius by its own natives who have deservedly risen to fame. When that good time comes true-hearted citizens will decorate their streets and squares with statues and memorials of the wise and worthy men and women who have adorned their province—not merely of kings, statesmen or warriors, but of philosophers, poets, men of science, philanthropists and great workmen."

How far are we from yet realizing this ideal, and how slowly we seem to progress in so desirable a direction! Still there are many signs that the conscience of the nation is at last awakened, and if we see to it that all the discussions at present filling the air do not end simply in talk, but that practical good shall be the outcome, then our progress during the coming twenty-five years will not be so discouraging. In no better way can this ideal be

realized than by an acute recognition of the place Museums should occupy in our national system of education.

LETTERS TO THE EDITOR.

*Correspondents are requested to be as brief as possible. The writer's name is in all cases required as a proof of good faith.

On request in advance, one hundred copies of the number containing his communication will be furnished free to any correspondent.

The editor will be glad to publish any queries consonant with the character of the journal.

FEIGNED DEATH IN SNAKES.

AFTER reading the letter on "Feigned Death in Snakes" in *Science* of Oct. 13, one is left with the impression that *Heterodon*, or the "blowing viper," or, as he is known in New Jersey, the "adder," actually bites itself in the side and then pretends to die.

As the adders are very common in the southern part of this state, I have had countless opportunities for watching this habit of feigning death and have never seen anything like an attempt, or even a pretended attempt, to bite themselves. The teeth of *Heterodon* are hardly large enough to scratch a tender hand, much less bite through or between the heavy folds of the snake's horny skin. How this supposition came about is easily seen, when the snake, after finding it cannot escape, is about to turn over on its back, throws its mouth wide open, tucks its head under its body and suddenly twists over, the whole affair, unless carefully watched, looks decidedly suicidal. But the snake has not bitten itself and had no intention of so doing.

The account referred to is quite right in believing that this is not a "faint from fear." The convolutions of the serpentine hemispheres are undoubtedly well twisted, but we can hardly credit the reptile with so delicately a balanced organism as to admit of its fainting.

The measure, I believe, is purely a protective one, and often of the greatest service. *Heterodon* is the slowest and most clumsy of all our snakes, and as it cannot depend on flight for safety, it needs other means for protection, of which this trick in question is among the best, as is also its beautifully adaptive coloration. The spewing out of the contents of the stomach is similar to that habit in turkey buzzards and many other creatures, and an additional aid in escaping their enemies.

The whole affair, then, is not a "pretended suicide" but a pretended death, with a stink solely for the snake's protection.

DALLAS L. SHARP.

Bridgeton, N. J., Oct. 24.

THE DESTRUCTION OF WILD PLANTS.

THE destruction of wild plants by students of botany and collectors has become appalling. Botany is becoming a universal study in the schools, and one hundred young people each gathering one plant to use and ten to twenty to throw away, soon exterminate the rarer plants.

The solution of the problem is at hand. Let teachers use only cultivated plants in their work. Of these an abundance can always be had. Turn the attention of students from the mere collection and analysis of plants to the more important subjects of plant physiology and economic botany. The time has come for a change.

G. G. GROFF.

Lewisburgh, Pa.

MINNESOTA MOUNDS.

IN reply to Mr. F. B. Sumner's criticism on my notes on Minnesota Mounds I would state that he should point out and correct some of my "gross misrepresentations" instead of indulging in absurd statements not bearing on the subject. Would also suggest that he read the article

again and with more care. Though Mr. Sumner has considerable ability in certain lines yet his youth and lack of special training should prevent him from criticising ideas acquired by considerable study and experience. Criticisms should be made with care.

ALBERT SCHNEIDER, M. D.

Weston, Ill., Oct. 26.

SLATE BLACK-BOARDS.

ATTENTION has been called to the fact that light is reflected from slate black-boards in an injurious manner. One city superintendent informs the writer that he has been compelled to lessen the amount of work to be copied from the board. A county superintendent writes that he cannot sit in a certain high school without experiencing painful sensations, if he faces the slate boards.

Have other teachers observed the same? Is a slate board more trying to the eyes than slated surfaces? Is a slated surface to be preferred to a true slate board?

Will not superintendents and teachers who care for the general health of the children in their charge, and especially for the eyesight of the children, communicate with the subscriber in reference to this matter? Answers to the questions are earnestly solicited. Address,

DR. GEO. G. GROFF,

Lewisburgh, Pa.

A GROOVED AXE IN A STRANGE PLACE.

SOME months since while making observations with Mr. Haldeman O'Connor, of Harrisburg, on an island in the Susquehanna, not far from the city, we came across a perpendicular exposure of a clay bed, from the face of which several feet of earth had been removed by a recent flood. Several boulders were imbedded in its face and one of them, *eight feet from the top*, on account of its peculiar shape, attracted attention, and on removal proved to be a grooved axe, well made of a heavy, close-grained sandstone, about six and a half inches long and two and a half inches wide, having a good cutting edge and a perfect groove—somewhat weathered but not differing in any particular from the many found on the surface. The bed in which the implement was found is a compact clay, the lowest and the last of the terrace deposits of the valley and consequently, geologically speaking, comparatively recent.

Any method, save one, to account for the presence of the axe in this position, was of no avail. The clay bed seemed to be unquestionably undisturbed, and no theory of trap roots nor upturning of trees would explain it. Did the axe find this resting place—eight feet below the surface—during the deposit of the bed? If it did its maker, whoever he was, must have lived about the same time,—some thousands of years ago, when the last of the prehistoric floods swept down this old valley, and the origin of Neolithic man, if such he was, must be placed at an early date.

HARVEY B. BASHORE.

West Fairview, Pa., Oct. 1.

THE SYSTEMATIC POSITION OF THE DIPTERA.

IN *Science* No. 558 for October 13, Dr. Packard has an article upon this subject, in the general conclusions of which I most heartily agree. Dr. Packard has not mentioned, by any means, all of the arguments in favor of his view, and some of these will be, I hope, presented by Dr. Riley, who has already suggested them in lectures, although they are not, so far as I am aware, published. There are a few points upon which Dr. Packard's paper is not entirely clear, or where, at least, I do not seem to be able to understand him entirely. He mentions, in one place, as characteristic of the Diptera the "abolition of mandibles (Simulium excepted)." In another place, the fact that the jaws are wanting, and finally speaks of the

mosquito, especially the female, in which mandibles and maxillæ are said to be well developed. The first statements are correct; but I must take issue with Dr. Packard on the statement that the mandibles are well developed in the mosquito, for, as a matter of fact, there is no trace of these organs in that insect. All the piercing and enveloping structures are, as I have shown, homologous with other mouth structures. It is further stated that the maxillæ are usually much reduced, while the labium is enormously developed and highly modified. I have, I think, shown very conclusively that the enormous development in the Dipterous mouth parts takes place in the maxillary structures and that the labium is in most cases very much reduced if not entirely wanting. The best development of this latter organ is seen in the piercing flies related to *Tabanus*, in which we are able to trace every part of the normal structure of the labium of a mandibulate insect. Dr. Packard's article reads as if he partially accepted and partially rejected my conclusions concerning the mouth structures of the Diptera, and I would be rather interested to know how far he considers my conclusions in that order well founded. The reference to the mouth parts is really not needed in order to support his claim, and in some directions the Dipterous mouth is certainly very much more highly specialized than that of the Hymenoptera.

JOHN B. SMITH,

Rutgers College, November 1st.

BOOK-REVIEWS.

A Guide to Stereochemistry, based on lectures delivered at Cornell University, with an index to the literature. By ARNOLD EILOART, Ph.D., B.Sc. New York, Alexander Wilson, 26 Delancey street. 96 p. with appendix, paper, 8vo., Ill. \$1.00, postage free.

THE want of a suitable text-book upon this deeply interesting new branch of chemistry, the geometrical relations of atoms in space, has long been felt. The literature is widely scattered and so fragmentary as to make such a "Guide" as this offered by Dr. Eiloart of utmost value to student and professor alike; to the latter as an aid in the preparation of his lectures and to the former as a digest of these lectures, with an indication of the lines and means for more extended study. Unfortunately, in many colleges this department of research is barely touched upon, not for lack of interest, however, but because with the limited time commonly at the disposal of the professor detailed correlation even of the work in this field is an impossibility.

While the study of structural isomerism dates from 1824, the actual development of stereochemistry begins about 1873—a retardation of extraordinary length, considering the easy step from one to the other. Isomerism conceives of compounds containing the same elements in the same proportions, and yet differing in properties, this difference being due to a different grouping of these elements. Geometrical isomerism conceives of compounds containing the same elements in the same proportions and arranged in the same groups and yet differing in properties because of a different arrangement in space of the constituent groups. The second conception is thus a natural outgrowth from the first. Dr. Eiloart passes with a few words the accepted facts of stereochemistry giving more particular attention to the living issues and more daring developments. The index to the literature is most carefully planned and is more than a mere list of titles, inasmuch as it gives by means of suitable abbreviations an idea of the contents of the papers referred to. An appendix with photographic plates, five in number, treats of the use of "Solid Formulae," or models in the teaching of organic chemistry. The book is copiously illustrated throughout with diagrams and woodcuts.

C. P.